

Research on Construction Management and Technology of Water Conservancy and Hydropower Engineering

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Abstract:

Water conservancy and hydropower is an important infrastructure and basic industry for economic and social development. With the substantial increase of investment in water conservancy and hydropower engineering in China, water conservancy and hydropower construction companies are facing new development opportunities. At present, the most important task of China's water conservancy and hydropower construction projects is to increase the research on the construction management and technology of water conservancy and hydropower construction projects, ensure the quality of construction projects, reduce the occurrence of quality problems and safety hazards, and achieve high efficiency and high quality construction projects within a reasonable time.

Keywords:

Water conservancy and hydropower; construction management; technology

Introduction:

With the continuous and rapid development of socialist modernization, more and more water conservancy and hydropower projects have been completed, and the construction technology of water conservancy and hydropower projects has also made great progress and innovation. The construction of the project pays more and more attention to the cooperation between technology and management, which further increases the construction frequency and construction scale of basic projects. Among them, the construction technology of water conservancy and hydropower engineering is directly related to the construction progress and construction quality of the whole project.

1 Characteristics of water conservancy and hydropower construction

If we want to do a good job in the construction and management of water conservancy and hydropower projects, we must first understand the characteristics of water conservancy and hydropower project construction itself, and grasp its characteristics, so that we can carry out targeted analysis and grasp the appropriate management of all aspects. Water conservancy and hydropower projects generally refer to the comprehensive and systematic projects of flood control, power generation, irrigation, water supply and improvement of water environment quality. The construction process of water conservancy and hydropower project is a very complicated process involving various fields. Its characteristics are as follows:

1.1 The construction process is very complex and requires a high level of management of the construction organization. Generally speaking, water conservancy and hydropower engineering is a system composed of many aspects, and the system contains many individual projects. The workload is very large and involves many types of work. This is usually centralized deployment, while multiple individual projects are almost identical, the location exists at the same time, and are susceptible to interference from the construction of individual projects. Management departments should strengthen the construction organization and management and overall planning, comprehensive deployment.

1.2 Water flow control during the construction of water conservancy and hydropower projects requires higher construction quality. As the name suggests, water conservancy and hydropower projects use water flow to generate electricity, and water flow has a great impact on the construction of the entire project. The construction of river, topographic and geological conditions as well as hydrometeorological conditions are all major challenges of the project. River construction is closely related to the lives and property

of downstream people, and the quality of construction is closely related to the safety of people's lives and property. Therefore, in the construction process, we must strictly control the quality of the project and be responsible for the people.

2 Construction management plan for water conservancy and hydropower engineering

2.1 Strengthen the leadership implementation responsibility system.

Attaching importance to leadership is an important prerequisite for improving the quality of water conservancy and hydropower projects. The full implementation of the project manager responsibility system and the project cost accounting system is the key to the implementation of the project, which determines the success or failure of the project management. As for the project manager responsibility system, the first is authorization. The project manager shall handle and coordinate the relationship between Party A and Party B, general contractors, subcontractors, supervisors, designers and relevant government departments within the scope of authorization to ensure the orderly coordination of the project. The second is the implementation, to use the perfect market mechanism, application mechanism, distribution mechanism, service mechanism and supervision mechanism, to ensure the implementation of the project manager responsibility system; The third is quality, including the quality of the project manager and the management quality of the project department. High quality is the foundation of project management and operation. The fourth is the organizational system, that is, the establishment of the project management organization system, an effective and flexible system is to achieve the four guarantees of the project (schedule assurance, quality assurance, safety assurance, cost assurance), four management (contract management, site management, information management, production factor management), to ensure the realization of the project objectives of the necessary conditions.

2.2 Control of construction safety

In the process of project construction, safety investment should be further increased, and safety protection equipment and equipment with qualified quality, complete functions and sufficient quantity should be purchased. In order to raise the safety awareness of front-line workers, this can be achieved through publicity campaigns, education on typical accident cases and training in self-protection skills. For the construction site, all dangerous areas need to set up corresponding warning signs and facilities, and dangerous production activities must be equipped with corresponding safety protection equipment to fundamentally avoid safety accidents.

2.3 Establishment and improvement of various rules and regulations

The establishment and improvement of various rules and regulations is the fundamental guarantee for the management and control of hydropower construction enterprises. To establish a good internal operation mechanism and improve the internal quality management system is a strong guarantee for risk control and a necessary condition for adapting to the new situation. Standardization work in line with this trend, standardization is the basic requirements of modern enterprise management, which is the basic guarantee for the normal operation of enterprises. Promote the rationalization, standardization and efficiency of enterprise production and operation activities and management, which is the basic premise of successful construction management and control. This requires enterprise management to be supported by the backbone of the majority of party members and cadres, and constantly improve their own and collective capabilities, forming a radiation control network point, outline, performance appraisal, rules to follow, and can follow the regulations, the whole process of control.

3 Research on construction technology of water conservancy and hydropower engineering

3.1 Rolling technology of concrete

At present, concrete rolling technology is a method to pour a large area by rolling dry and hard concrete mixture, and the concrete rolling technology has been widely promoted and applied, which is a dam technology that has just emerged and developed rapidly in recent years. Its advantage is that it does not affect the strength of concrete, and can be well improved in terms of level, efficiency and profitability. This method has the advantages of high economic benefit, fast construction speed, less investment and quick effect. Mainly suitable for large quantities, large area construction. Compared with traditional concrete, the advantages of RCC are as follows: the method is close to the filling method of earth-rock dam; Solid rolling surface; Slump zero, dry and hard mixture. In line with ordinary concrete materials, gravel aggregates, cementified materials, water and some pores are the main components of RCC and can be used in various construction works. But the difference is that the proportion of the material

combination varies greatly, and the RCC is compacted and compacted, mainly because the mixture is more viscous. In terms of cooperation, the main differences between RCC materials and ordinary concrete materials are: sand content; Aggregate diameter should not be too large; There is more fly ash; The cement content is small, and RCC has the characteristics of high and narrow viscosity range. As a new building material, RCC is mainly composed of sand gravel and cement admixture concrete, differential roller compacted concrete and high fly ash mixed concrete. According to the specific conditions of rolling, pushing and pulling, and transportation, the requirements for roller compacting concrete are usually different in construction. The main construction method of RCC is thin layer laying. Therefore, the weakest spot is between the laminated layers, which is closely related to the durability and stability of the project.

3.2 Construction technology of dam slope concrete panel

At present, the main technology used for dam slope concrete slab is trackless synovial construction. First, the central position is constructed, and then the concrete is poured to both sides by jumping bin. During construction, it is necessary to ensure that the thickness of each layer of concrete panel poured is within the range of 0.25m-0.3m, and that the spacing between the top of the synovial membrane and the discharge port is within 1m when the layered fabric is distributed.

During the vibration construction of the cement, it is necessary to ensure that the vibration depth meets the relevant specifications. When lifting the template, the two ends of the template should be lifted at a balanced and uniform speed. After the concrete is demoulded, it is necessary to trim and grind it in time, and carry out the corresponding pressure surface construction, and do the related thermal insulation maintenance work.

3.3 Construction technology of dam body filling

In the construction process of water conservancy and hydropower project, the main operation content and key technology of dam filling is dam surface flow operation. In the actual construction process, not only the largest area of the dam body, but also large construction machinery and equipment can enter and operate normally for the division of labor direction and section. When classifying the production surface of dam flow, the construction conditions of large rolling machinery can be used as the measurement standard. Under normal circumstances, its width should exceed the minimum standards and conditions required for mechanical compaction and abortion, and it can be initially set at 10 to 20 meters. At the same time, the length needs to consider the type of machine, performance and function. Under the premise of ensuring the normal operation of the machine, it can be initially set to about 40 meters to 100 meters. For the filling of the dam body, in the construction process and sequence division process, the dam body should be determined according to the actual construction standards and design requirements, and according to the work intensity, fill area, material supply mode, and site climate to fill in the workflow and specific steps. It is worth noting that if the construction is in low temperature or winter construction, the operation time should be strictly controlled, and the cycle operation and production time should be reduced as much as possible to minimize the heat loss of building materials. After the dam body is filled, after scientific division and reasonable demarcation of the flow surface of the dam body, the construction continues according to the conventional method.

Conclusion

Water conservancy and hydropower projects are an important material basis for China's social development. For the construction of domestic infrastructure projects, various construction techniques, methods and procedures have been developed according to the nature of the project, construction conditions and design requirements. However, in the actual construction of water conservancy and hydropower projects, relying solely on advanced construction technology cannot guarantee the safety and quality of project construction. In this regard, it is necessary to reasonably match the construction technology and scheme according to the actual situation, and supervise and control it in the construction process, so as to limit unsafe behaviors and operations, eliminate potential safety hazards, and complete the construction of the project with high quality.

References:

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